ABSTRACT

In this invention, a new tree-structured generation method for obtaining orthogonal variable spreading factor (OVSF) codes that preserve orthogonality between different rates and spreading factors (SF) based on Gray code labels in a CDMA system is presented. Each OVSF code is uniquely associated with a Gray code label. An efficient method for deciding if the code is a mother code or children code of the other code without searching an entire code tree is proposed. Furthermore, by taking advantage of the Gray code labeling, each OVSF code can be generated directly from a generating matrix instead of being generated recursively using a tree structure. An OVSF code reassignment method with Gray code labeling is also given.